

Original Research Article

Low Back Pain and Quality of Life among Women in a Rural Area of Bangladesh

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Abstract: Background: Low back pain (LBP) is a major public health problem and one of the leading causes of disability worldwide. It adversely affects physical functioning, psychological well-being, and overall quality of life, particularly among women living in rural communities. **Objective:** To examine the relationship between level of low back pain and quality of life among women in a rural area of Bangladesh. **Methods:** A descriptive correlational study was conducted among 101 women with low back pain from four villages in Gopalpur Upazila, Tangail, Bangladesh. Participants were recruited using a multistage sampling technique. Data were collected through face-to-face interviews using a socio-demographic questionnaire, the Numeric Pain Rating Scale (NPRS), and the 36-Item Short Form Health Survey (SF-36). Descriptive and inferential statistics (Pearson correlation, independent-samples *t*-test, and one-way ANOVA) were performed, with statistical significance set at $p < 0.05$. **Results:** The mean age of the participants was 41.90 ± 7.03 years. Most participants (66.3%) reported moderate low back pain, while 18.8% and 14.9% experienced mild and severe pain, respectively. The mean total quality-of-life score was 38.45%. Educational qualification ($F = 4.518$, $p = 0.013$), monthly family income ($r = 0.395$, $p < 0.001$), and number of children ($F = 4.779$, $p = 0.010$) were significantly associated with quality of life. A significant negative correlation was observed between low back pain intensity and quality of life ($r = -0.672$, $p < 0.001$), indicating that higher pain intensity was associated with poorer quality of life. **Conclusion:** Low back pain was significantly associated with poorer quality of life among rural women in Bangladesh. Early identification and appropriate interventions are needed to reduce pain and improve quality of life in this population.

Keywords: Low Back Pain, Quality of Life, Rural Women, Bangladesh.

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INTRODUCTION

Low back pain (LBP) is one of the leading musculoskeletal disorders and a major global public health concern because of its high prevalence, substantial disability burden, and adverse effects on individuals' physical, psychological, and social well-being. It is defined as pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, with or without leg pain. LBP is considered a symptom rather than a disease and may arise from various specific or non-specific conditions. It is recognized as one of the leading causes of years lived with disability worldwide and imposes considerable healthcare and socioeconomic burdens through reduced

productivity, increased healthcare utilization, and functional limitations (Hartvigsen *et al.*, 2018).

Globally, the prevalence of LBP has increased over recent decades, affecting approximately 568 million people in 2019, with women experiencing a higher burden than men. The prevalence also increases with advancing age, making women, particularly those in middle and older adulthood, more susceptible to persistent pain and disability (Wu *et al.*, 2020). In rural populations, women often perform physically demanding household, agricultural, and caregiving activities that may further increase their vulnerability to developing LBP. A study conducted among rural women in India also demonstrated a high prevalence of LBP and

reported that pain was associated with reduced quality of life and greater disability (Ahdhi *et al.*, 2022).

In Bangladesh, LBP is a significant public health problem. A recent national survey reported a high prevalence of LBP among Bangladeshi adults, indicating that women are disproportionately affected. Rural women may be particularly vulnerable because of prolonged physical labor, limited access to healthcare services, poor ergonomic practices, and lower socioeconomic conditions (Majumder *et al.*, 2022). Furthermore, evidence from rural Bangladesh has shown that factors such as age, obesity, physically demanding work, and other lifestyle-related characteristics are significantly associated with non-specific LBP (Shahin *et al.*, 2022).

The development and persistence of LBP are influenced by multiple interrelated risk factors. Biomechanical factors, including repetitive movements, heavy lifting, prolonged standing, awkward postures, and physically demanding occupations, are well-established contributors. In addition, psychological factors such as stress, anxiety, and emotional distress may exacerbate pain severity and contribute to chronic symptoms, thereby increasing functional impairment (Lee *et al.*, 2021). Beyond physical discomfort, LBP substantially affects quality of life by limiting mobility, reducing physical functioning, restricting daily activities, and negatively influencing emotional and social well-being. Individuals with more severe LBP generally experience poorer health-related quality of life, highlighting the importance of assessing both pain severity and its broader impact on daily living (Kazemi *et al.*, 2021).

Although previous studies have documented the prevalence and associated factors of LBP in Bangladesh, evidence specifically examining the relationship between low back pain and quality of life among rural women remains limited. Understanding this relationship is essential for developing evidence-based prevention strategies, community health interventions, and rehabilitation programs tailored to the needs of rural women. Therefore, the present study aimed to examine the relationship between the level of low back pain and quality of life among women living in a rural area of Bangladesh.

METHODS

Study Design

A descriptive correlational study design was conducted to examine the relationship between level of low back pain and quality of life among women in a rural area of Bangladesh.

Study Participants

Women with low back pain residing in Gopalpur Upazila, Tangail District, constituted the study population. This study was conducted at four villages in

this upazila. There are seven unions and 119 villages in Gopalpur Upazila. A multistage sampling technique was employed. Four unions were randomly selected from the seven unions of Gopalpur Upazila, followed by the random selection of one village from each selected union. Eligible women with chronic low back pain were then recruited using convenience sampling from the selected villages.

The total number of women in Gopalpur Upazila was 65619 (Bangladesh Bureau of Statistics, 2001). The number of women in setting one was 17167, and the sample was $101(17167/65619) = 26$. Similarly, the sample was in setting two $101(16430/65619) = 25$, setting three $101(18204/65619) = 28$, and setting four $101(13818/65619) = 22$. The required sample size was calculated using G*Power version 3.1.9.2 based on a bivariate normal correlation model (two-tailed) (Cohen, 1988). A medium effect size of 0.30, a significance level (α) of 0.05, and a statistical power ($1-\beta$) of 0.80 were specified. Based on these assumptions, the minimum required sample size was 84 participants. To account for an anticipated 20% non-response rate, the sample size was increased to 101 participants, which was considered adequate to achieve the study objectives. The researcher was required the participants based on the following inclusion criteria: 1) women aged 30–50 years, 2) Women who have had low back pain for at least three months; and 3) Women who are willing and able to participate in the study. Exclusion criteria were: 1) cancer, trauma, or vertebral fracture 2) Previous history of lumbar surgery 3) Pregnant women.

Instruments

A set of structured questionnaires was used for data collection. The questionnaire contained three parts.

First part was socio-demographic questionnaire that contained 14 items including age, height, weight, religion, education, occupation, monthly family income, types of delivery, family history of low back pain, number of children, diabetes, hypertension, and menopause.

Second Part was Numeric Pain Rating Scale (NPRS)

The NPRS was used to measure the level of low pain among the participants. Which was developed by McCaffery *et al.*, (1989) and the Numeric Pain Rating Scale that used to measure pain intensity in adults (Child, Piva, & Fritz, 2005), including those with low back pain due to rheumatic diseases (Ferraz *et al.*, 1990). It is an open-access scale. Assigning scores of 0–10 according to the response categories. Scores 0 indicate no pain, 1-3 indicate mild pain, 4-6 indicate moderate pain, and 7–10 indicate severe pain. Several studies suggest that the NPRS is a reliable and valid instrument to measure pain, and its test-retest reliability is high ($r = 0.96$) (Ferraz *et al.*, 1990; Shafshak & Elnemr, 2020).

Third Part was Quality of Life Scale (SF-36)

The third part of the questionnaire consisted of the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36), which was developed by Ware and Sherbourne (1992) to assess health-related quality of life. The SF-36 comprises 36 items, including 35 items grouped into eight health domains: physical functioning (10 items), role limitations due to physical health (4 items), bodily pain (2 items), general health (5 items), vitality/energy (4 items), social functioning (2 items), role limitations due to emotional problems (3 items), and mental health (5 items). The remaining one item assesses perceived health transition compared with one year earlier and is not included in the calculation of the eight domain scores. Scores for each domain are transformed to a 0–100 scale, with higher scores indicating better health-related quality of life and lower scores indicating poorer quality of life. The SF-36 is a widely used, valid, and reliable instrument for assessing quality of life (Ware & Sherbourne, 1992; Zahra et al., 2020). The Bangla version has demonstrated excellent validity and reliability among the Bangladeshi population (Cronbach's $\alpha = 0.94$ – 0.99). The researcher used the original Bangla version of the instrument without modification.

Data Collection

Ethical approval was obtained from the Institutional Review Board (IRB) of the National Institute of Advanced Nursing Education and Research (NIANER) and Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. Eligible women with low back pain were recruited with the assistance of community leaders. Written informed consent was obtained from all participants before data collection. Face-to-face interviews were conducted using a structured Bengali questionnaire between 28 February and 27 March 2023. Each interview lasted approximately

25–30 minutes, and participants' blood pressure, height, and weight were measured. Home visits were conducted for women who were unable to attend the interview venue because of severe pain.

Ethical Considerations

Participation was voluntary, and confidentiality and anonymity were ensured by using unique identification codes. Participants were informed of their right to withdraw from the study at any time without penalty.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize the data. Independent *t*-tests, one-way analysis of variance (ANOVA), and Pearson's product-moment correlation coefficient were used to examine the relationships between socio-demographic characteristics, low back pain intensity, and quality of life. Statistical significance was set at $p < 0.05$.

RESULTS

Socio-Demographic Characteristics of the Participants

Table 1 shows that the mean age of the participants was 41.90 ± 7.03 years, and the mean BMI was 21.94 ± 4.28 kg/m². All participants were Muslim. Most participants were housewives (95.0%), married (88.1%), and had primary education (41.6%). The mean monthly family income was BDT 10,732.67 $\pm$ 4,012.21. The majority (88.1%) had vaginal delivery, and more than half (56.4%) had three or more children. Additionally, 53.5% reported a family history of low back pain, 31.7% had hypertension, 4.0% had diabetes mellitus, and 50.5% had reached menopause.

Table 1: Distribution of Socio-demographic Characteristics of Participants (N= 101)

Variables	Frequency (n)	Percentage (%)	M $\pm$ SD
Age		41.90 ± 7.026 , Min-Max-30-50	
Body Mass Index		21.94 ± 4.28 Min-Max-12.41-34.45	
Religion			
Islam	101	100	
Educational Qualification			
Illiterate	36	35.6	
Primary	42	41.6	
Secondary	19	18.8	
Above	4	4.0	
Occupation			
House wife	96	95	
Service holder	5	5	
Marital status			
Married	89	88.1	
Unmarried and others	12	11.9	
Monthly Family income		10732.67 ± 4012.209 , Min-Max- 5000-22000	
Types of delivery			
Vaginal	89	88.1	

Variables	Frequency (n)	Percentage (%)	M±SD
Caesarean	6	5.9	
Both	6	5.9	
Number of children			
One	13	12.9	
Two	31	30.7	
Three and more	57	56.4	
Family history of LBP			
Yes	54	53.5	
No	47	46.5	
DM			
Yes	4	4.0	
No	97	96	
Hypertension			
Yes	32	31.7	
No	69	68.3	
Menopause			
Yes	51	50.5	
No	50	49.5	

Level of Low Back Pain among the Participants

Table 2 Shows the distribution of level of pain among the participants. According to the findings it

showed that 66.3% of the participants was moderate pain, about 19% of the participants was mild pain and only 14.9% of the participants was severe pain.

Table 2: Distribution Level of Low Back Pain among the Participants

Level of pain	Score	Frequency	Percentage
Mild	1-3	19	18.8
Moderate	4-6	67	66.3
Severe	7-10	15	14.9

Quality of Life among the Participants

Table 3 shows the Quality of Life among the participants which was measured by SF-36 quality of life scale containing eight dimension of 35 items with 3500

scores. The finding revealed that mean score of total quality of life among participants was 38.45%. The highest score was 42.69% in physical functioning and the lowest score was 32.77% in general health.

Table 3: Distribution of Quality of Life among the Participants (N=101)

Dimension of QOL	Minimum	Maximum	M±SD	% of item mean Score
Physical functioning	150.00	850.00	450.99 ± 175.21	45.10
Role limitation due to physical health problem	.00	400.00	142.57 ± 88.70	35.64
Role limitation due to emotional health problem	.00	300.00	113.86 ± 72.15	37.95
Energy/ Fatigue	80.00	220.00	145.74 ± 26.28	36.43
Emotional well-being	120.00	280.00	168.31 ± 26.42	33.66
Social functioning	50.00	150.00	85.39 ± 26.98	42.69
Pain	20.00	135.00	75.09 ± 29.90	37.54
General health	50.00	350.00	163.86 ± 75.53	32.77
Total QoL Score	50.00	2510.00	1345.84 ± 428.68	38.45

Relationship among Socio-Demographic Characteristics and Low Back Pain Score with Total Quality of Life Score of the Participants

Table 4 shows that the relationship among socio-demographic characteristics and low back pain score with total quality of life score of the participants. Bivariate analysis were done to examine the relationship among socio-demographic characteristics and low back pain score with total quality of life score of the participants. The study findings revealed that educational qualification and quality of life score were statistically

significant ($F = 4.518$, $p = .013$). The participants who were educated their quality of life score were highest. The study report showed that there was a highly significant positive correlation ($r = .395$, $p = .000$) between total quality of life score and monthly family income of the participants. Quality of life score were highest among the participants who were more monthly family income. There was a significant relationship ($F = 4.779$, $p = .010$) between total quality of life score and the number of children. Those participants who had three or more children their total quality of life score was

lower. This study result also shows that there was a highly significant negative correlation between total quality of life score and total back pain score among the participants. Higher the score of back pain significantly decline the score of total quality of life among the

participants. The rest of variables were not significant towards relationship among socio-demographic characteristics and low back pain score with total quality of life score.

Table 4: Relationship among Socio-Demographic Characteristics and Low Back pain Score with Total Quality of Life Score of the Participants (N=101).

Variables	N	M±SD	t/f/r	(P)
Age	101		-.138	.169
Body Mass Index	101		-.095	.346
Educational Qualification				
Illiterate	36	1254.02 ± 360.897 ^a	4.518	.013
Primary	42	1301.30 ± 404.674 ^b	c>b>a	
Secondary and above	23	1570.86 ± 502.407 ^c		
Occupation				
Housewife	96	1353.64 ± 435.015	.800	.425
Service Holder	05	1196.00 ± 265.315		
Marital status				
Married	89	1356.29 ± 433.353	.665	.507
Unmarried and others	12	1268.333 ± 401.085		
Monthly Family income	101	10732.67 ± 4012.209	.395	.000
Types of delivery				
Vaginal	89	1326.34 ± 429.428 ^a	2.377	.098
Caesarean	6	1770.50 ± 486.471 ^b	b>a>c	
Both	6	1273.33 ± 151.415 ^c		
Number of children				
One	13	1673.07 ± 576.257 ^a	4.779	.010
Two	31	1324.67 ± 382.905 ^b	a>b>c	
Three and more	57	1282.79 ± 386.395 ^c		
Family history of LBP				
Yes	54	1279.16 ± 396.760	-1.691	.094
No	47	1422.44 ± 454.883		
DM				
Yes	4	1213.75 ± 520.134	-.627	.532
No	97	1351.28 ± 426.871		
Hypertension				
Yes	32	1261.25 ± 388.726	-1.356	.178
No	69	1385.07 ± 443.213		
Menopause				
Yes	51	1293.92 ± 392.212	-1.232	.221
No	50	1398.80 ± 460.880		
Low back pain score	101		-.672	.000

DISCUSSION

This study examined the relationship between low back pain (LBP) and quality of life (QoL) among rural women in Gopampur Upazila, Tangail, Bangladesh. The findings highlight the substantial burden of LBP among rural women and emphasize the importance of both clinical and socioeconomic factors in determining health-related quality of life.

Socio-Demographic Characteristics of the Participants

The socio-demographic characteristics of the participants were generally comparable with those reported in previous studies involving women with chronic LBP. The mean age of the participants was 41.90

years, representing a predominantly middle-aged population, which is consistent with studies showing that LBP commonly affects adults during their productive years (Hartvigsen *et al.*, 2018; Wu *et al.*, 2020). The mean body mass index (BMI) of the participants was within the normal range. Although BMI has been reported as a potential factor associated with low back pain, the relationship remains inconsistent across different populations and study settings. Previous studies have shown that overweight and obesity may increase the risk of low back pain through greater mechanical loading on the spine; however, this association may be influenced by age, physical activity, occupation, and other lifestyle factors (Bento *et al.*, 2020; Uehara *et al.*, 2021). The absence of a significant association between BMI and quality of life in the present study suggests that

other socioeconomic and clinical factors may have had a greater influence on the participants' health-related quality of life.

Most participants had primary-level education, were housewives, and were married, reflecting the typical socioeconomic characteristics of rural Bangladeshi women. Similar demographic characteristics have been reported among women with low back pain in rural India, where participants were predominantly married women with limited educational attainment and substantial household responsibilities (Ahdhi *et al.*, 2022). Comparable findings have also been reported in Bangladesh, where women from lower socioeconomic backgrounds experience a considerable burden of low back pain and other musculoskeletal disorders (Barua & Sultana, 2015; Majumder *et al.*, 2022). These similarities suggest that socioeconomic disadvantage and domestic workload may contribute to the burden of chronic low back pain among rural women.

The average monthly family income of the participants was relatively low, reflecting the economic conditions of rural households in Bangladesh. Limited financial resources may reduce access to healthcare services, rehabilitation, and preventive interventions, thereby increasing the burden of chronic musculoskeletal disorders. More than half of the participants had three or more children and reported a family history of LBP. Previous studies have suggested that family history may reflect shared genetic susceptibility, environmental exposures, or lifestyle factors that contribute to chronic LBP (Alhalabi *et al.*, 2015). However, additional longitudinal studies are required to clarify the contribution of hereditary and familial factors to chronic LBP.

Level of Low Back Pain and Quality of Life among Rural Women

The present study demonstrated that moderate LBP was the most common level of pain among the participants. This finding is consistent with studies conducted among women with chronic LBP in Iran and rural India, where moderate pain was also the predominant category (Kazemi *et al.*, 2021; Ahdhi *et al.*, 2022). In contrast, Zahra *et al.*, (2020) reported a higher prevalence of severe LBP among healthcare workers. This discrepancy may be attributed to differences in occupational demands, as healthcare professionals are frequently exposed to prolonged standing, repetitive lifting, and awkward working postures, whereas the majority of participants in the present study were rural housewives whose daily activities mainly involved household work and caregiving responsibilities.

The overall quality-of-life score observed in this study was relatively low, indicating that chronic low back pain substantially affected participants' well-being. Among the SF-36 domains, general health had the lowest mean score, followed by emotional well-being, role

limitation due to physical health problems, and pain, suggesting that participants perceived poor overall health and experienced limitations in both physical and emotional functioning. Similar findings have been reported in previous studies demonstrating that chronic low back pain adversely affects multiple dimensions of health-related quality of life (Husky *et al.*, 2018; Kazemi *et al.*, 2021; Zahra *et al.*, 2020). Persistent pain may restrict daily activities, interfere with household responsibilities, reduce functional capacity, and contribute to psychological distress, ultimately leading to poorer quality of life. These findings highlight the multidimensional impact of chronic low back pain and support the need for comprehensive interventions that address both physical and psychosocial health.

Relationship between Socio-demographic Characteristics and Quality of Life

Educational qualification was significantly associated with QoL, with women who had higher educational attainment reporting better quality of life. This finding is consistent with previous studies demonstrating that educational attainment is an important determinant of health-related quality of life among individuals with chronic LBP (Ahdhi *et al.*, 2022; Zahra *et al.*, 2020). Higher educational attainment may improve health literacy, increase awareness of disease prevention and treatment, and promote appropriate healthcare-seeking behaviour. Educated women are also more likely to understand medical advice, adopt healthier lifestyles, and adhere to recommended treatment, thereby contributing to improved quality of life.

Monthly family income was another significant determinant of QoL. Women with higher household income experienced better quality of life than those from lower-income families. This finding is consistent with previous studies indicating that socioeconomic status influences health outcomes and quality of life among individuals with chronic musculoskeletal disorders (Ahdhi *et al.*, 2022; Husky *et al.*, 2018). Greater financial resources may improve access to healthcare services, medications, physiotherapy, nutritious food, and supportive living conditions while reducing the economic burden associated with chronic illness. In contrast, limited income may delay treatment and restrict access to appropriate rehabilitation, thereby contributing to poorer health outcomes.

The number of children was also significantly associated with QoL. Women with three or more children had lower quality-of-life scores than women with fewer children. This finding is consistent with previous evidence suggesting that larger family size may adversely influence physical and mental well-being because of increased caregiving responsibilities and reduced opportunities for self-care (Xiao *et al.*, 2019). These cumulative demands may aggravate chronic pain and impair quality of life, particularly among women living in resource-limited rural settings.

In contrast, age, BMI, occupation, marital status, family history of low back pain, diabetes, hypertension, menopause, and mode of delivery were not significantly associated with quality of life in the present study. Although previous studies have identified some of these variables as potential determinants of low back pain or health-related quality of life, the findings have been inconsistent across different populations and settings (Bento *et al.*, 2020; Shahin *et al.*, 2022; Uehara *et al.*, 2021). The lack of significant associations in the present study may reflect the relatively homogeneous characteristics of the study population, the modest sample size, or the influence of other unmeasured socioeconomic and psychosocial factors. Therefore, larger multicentre studies using more diverse populations are warranted to further investigate these relationships.

Relationship between Low Back Pain and Quality of Life

The principal finding of this study was the strong negative correlation between LBP intensity and QoL, indicating that women with higher pain intensity experienced significantly poorer quality of life. This finding is consistent with previous studies reporting that increasing pain severity is associated with deterioration in physical, psychological, and social dimensions of quality of life among individuals with chronic LBP (Husky *et al.*, 2018; Kazemi *et al.*, 2021; Zahra *et al.*, 2020). Chronic pain may reduce mobility, impair functional capacity, disturb sleep, limit participation in household and social activities, and increase psychological distress. Collectively, these consequences contribute to reduced physical, emotional, and social well-being.

The relatively strong correlation observed in this study suggests that pain intensity is a major determinant of quality of life among rural women with chronic LBP. Therefore, effective pain management should be considered a priority within community health services. Early identification of women at risk, timely referral for appropriate treatment, health education regarding proper body mechanics and regular physical activity, and improved access to rehabilitation services may reduce pain severity and improve quality of life. Community health nurses can play a pivotal role in implementing these interventions through community screening, health promotion, patient education, and follow-up care. Integrating evidence-based pain management strategies into primary healthcare services may substantially reduce the burden of chronic LBP among rural women in Bangladesh.

CONCLUSION

This study found that moderate low back pain was the most common pain level among rural women with chronic low back pain, and their overall quality of life was poor, particularly in the general health domain. Educational qualification, monthly family income, and the number of children were significantly associated with

quality of life. A strong negative correlation was observed between low back pain intensity and quality of life, indicating that increased pain was associated with poorer quality of life. These findings highlight the need for comprehensive pain management and community-based interventions to improve the well-being of rural women with chronic low back pain.

Recommendations

Community-based health education, early screening, and evidence-based pain management interventions should be strengthened through primary healthcare services to reduce the burden of chronic low back pain. Community health nurses should promote proper body mechanics, regular physical activity, and self-management strategies, with particular attention to women with lower education, lower income, and larger family size. Future multicentre longitudinal studies with larger samples are recommended to confirm these findings and explore additional factors affecting quality of life.

Strengths

This study provides baseline evidence on the relationship between low back pain and quality of life among rural women in Bangladesh using standardized and validated instruments. The findings also identify important socioeconomic factors associated with quality of life, which may help guide community health nursing practice and primary healthcare planning.

Limitations

The cross-sectional design precludes causal inference, and the use of convenience sampling from a single rural community limits the generalizability of the findings. In addition, self-reported data may be subject to recall and social desirability bias, and some potentially important factors influencing quality of life were not assessed.

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